

Year 8 – DOT

‘Designing for anyone and everyone in our changing world’



UNIVERSITY OF
CAMBRIDGE

The problem we are looking at this module-

Design a salt and pepper dispensing product for flavouring meals, to an individual's taste preference, after it has been served i.e. not during the cooking process (this is traditionally done with a salt and pepper set).

Ensure that the product:

- Caters for the diverse needs in the population, in particular for people with impaired eyesight and reduced dexterity.
- Is still a desirable product to own and use.
- Addresses all the issues associated with the use of the product, from storage through to dispensing.
- When you come back to school the following activities will enable you to keep up with your classmates.

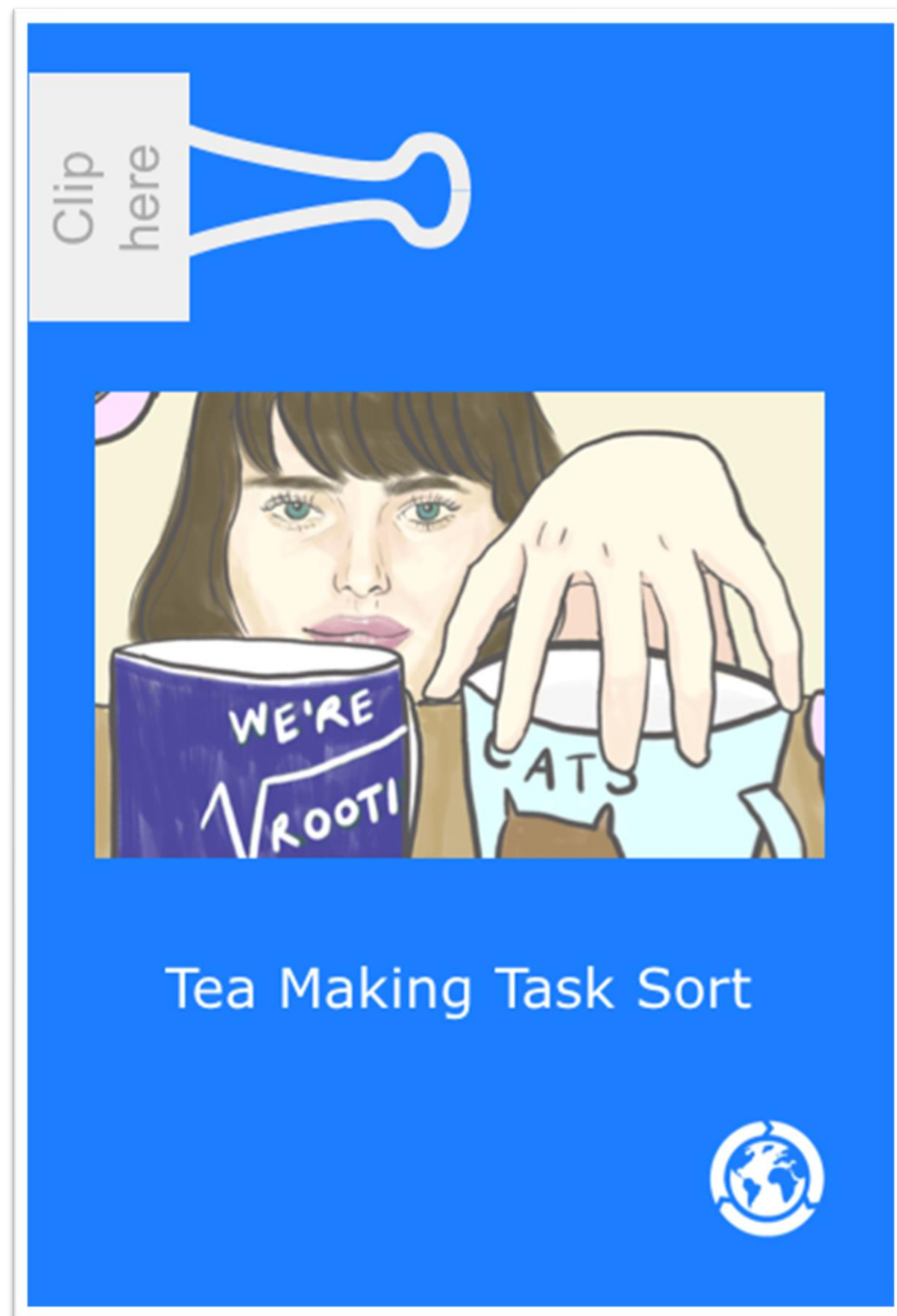


Lesson 1:

Breaking down the tasks



Tea Making Task



- You need to be able to break down tasks in order to understand how to design better products
- For this activity you need to make a cup of tea. Whilst completing this task you need to write down each stage as you complete it, on a piece of paper or take photos.
- The following slide will help you decided how to record it.



Task Analysis Tips

1. Step size: ensure steps are a useful size to aid understanding

- ✗ Do not combine lots of steps e.g. boil water for tea
- ✗ Do not break down into steps that are too small e.g. move hand towards kettle switch – press button with finger – move hand away
- ✓ Pick up kettle – fill with kettle with water – replace kettle on stand

2. Relevance: ensure steps are relevant to the focus of the brief

- ✗ Pick out favourite mug from cupboard
- ✓ Place tea bag in mug

3. Start & finish: pick start & end points that highlight all relevant issues

- ✗ Walk into kitchen
- ✓ Pick up kettle

4. Solution Independence: ensure steps are not based on specific products

- ✗ Press blue button at the bottom of the kettle
- ✓ Turn kettle on



Activity: Salt & Pepper Task Analysis

- **Salt & Pepper task analysis**, map out **in detail** each **task step** a person would need to go through when using salt and pepper **at dinner time** (after it has been cooked/prepared).
- Imagine a meal with guests who would expect salt & pepper
- Consider: **Before, During and After** the meal. Imagine the table has been set and you need to add the salt & pepper to the table.
- The **salt pot has run out** and will need to be refilled from a plastic container.
- You can go onto the back of the sheet if you run out of space.
- Remember the **Task Analysis Tips**



Sheet 3: Salt & Pepper task analysis

Name(s): _____
Date: _____

Scenario

- You are laying out a table for a dinner where your guests will expect salt and pepper to be available.
- The salt and pepper pots are stored in a cupboard.
- The salt pot has run out, and needs to be refilled from a plastic container. The pepper pot is full.

1 _____ 2 _____

3 _____ 4 _____ 5 _____ 6 _____

7 _____ 8 _____ 9 _____ 10 _____

11 _____ 12 _____ 13 _____ 14 _____

15 _____ 16 _____ 17 _____

Use another sheet if you have more task steps

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Sheet 3: Salt & Pepper task analysis

Name(s):

Date:

Scenario

- You are laying out a table for a dinner where your guests will expect salt and pepper to be available.
- The salt and pepper pots are stored in a cupboard.
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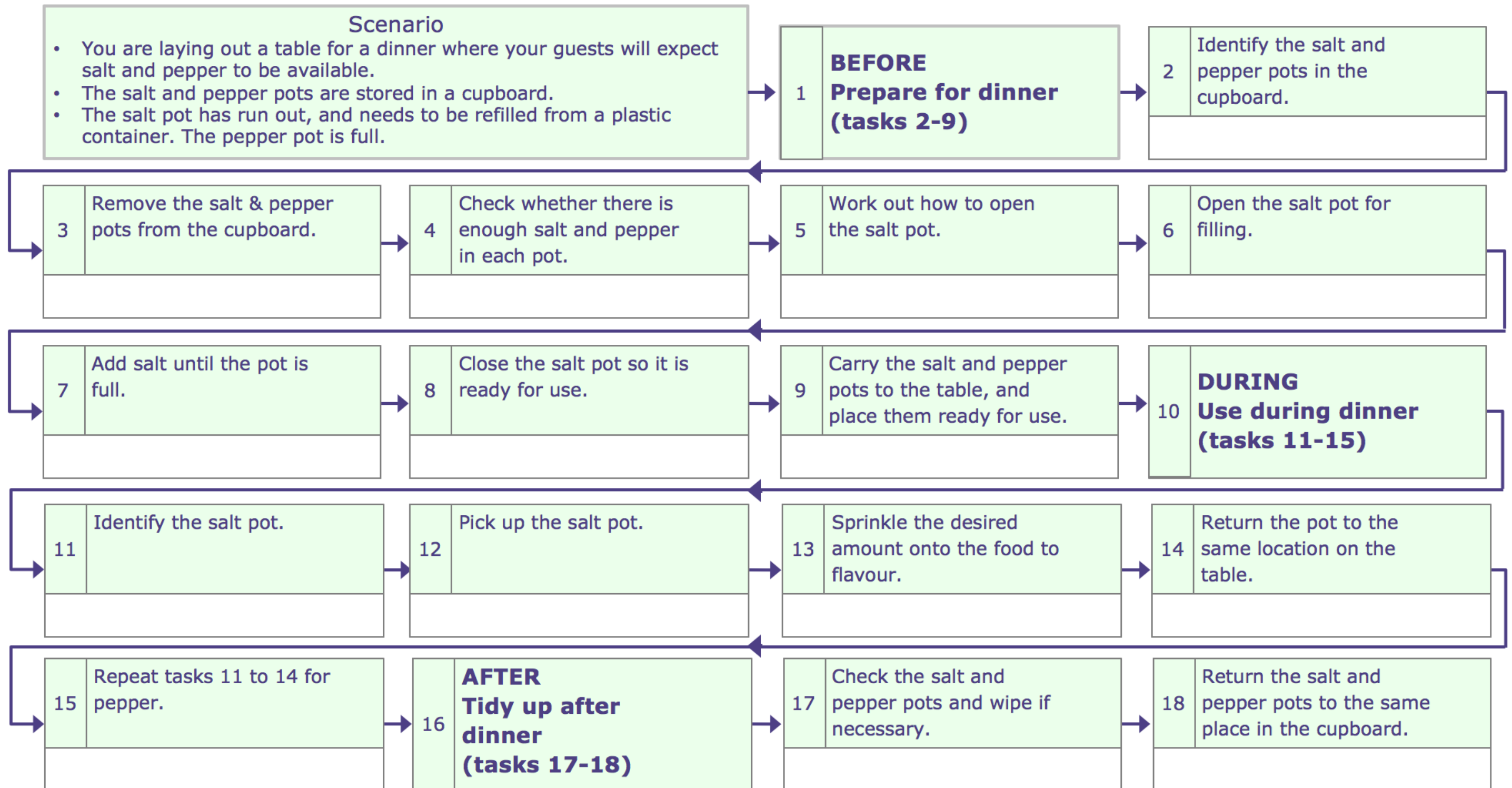
15

16

17

Use another sheet if
you have more task
steps

An Example Task Analysis – completed.



There is no single right answer but the order of some task steps is critical

Note the split into BEFORE, DURING and AFTER



Lesson 2:

Inspiration from the work of others



Plastic & Stainless Steel

Year 8 Looking for Inspiration from the work of others.

- Completely fill one side of A4 paper
- Label each one with the materials and features . Use arrows and pictures to explain. I have completed a Braille example
- Make sure all images are clear
- Look for ones that have feature to help people with visual problems / design to fit into the hand easily

Silver

Wooden

Handles to help fill and hold



The Braille Alphabet

a	b	c	d	e	f	g	h	i
k	l	m	n	o	p	q	r	s
u	v	w	x	y	z			

Lesson 3 :

Considering the needs of others



The Role of Design: Designing for Diversity



Design has a central role to play in **shaping the future: Inclusive Design** has a particular relevance to addressing the demands of an ageing population...

Can you design a product for people who have
Arthritis and visual impairment.

Nicholl, B., Flutter, J.A.E., Hosking, I.M. and Clarkson, P.J. (2013) 'Joining up the DOTs: authentic teaching and learning in Design and Technology Education', *Cambridge Journal of Education*, 43(1), pp. 435–450.



Arthritis: What is it?

Symptoms include:

- joint **pain, tenderness** and **stiffness**
- **inflammation** in and around the joints
- **restricted movement** of the joints
- warm, red skin over the affected joint
- **weakness** and **muscle wasting**



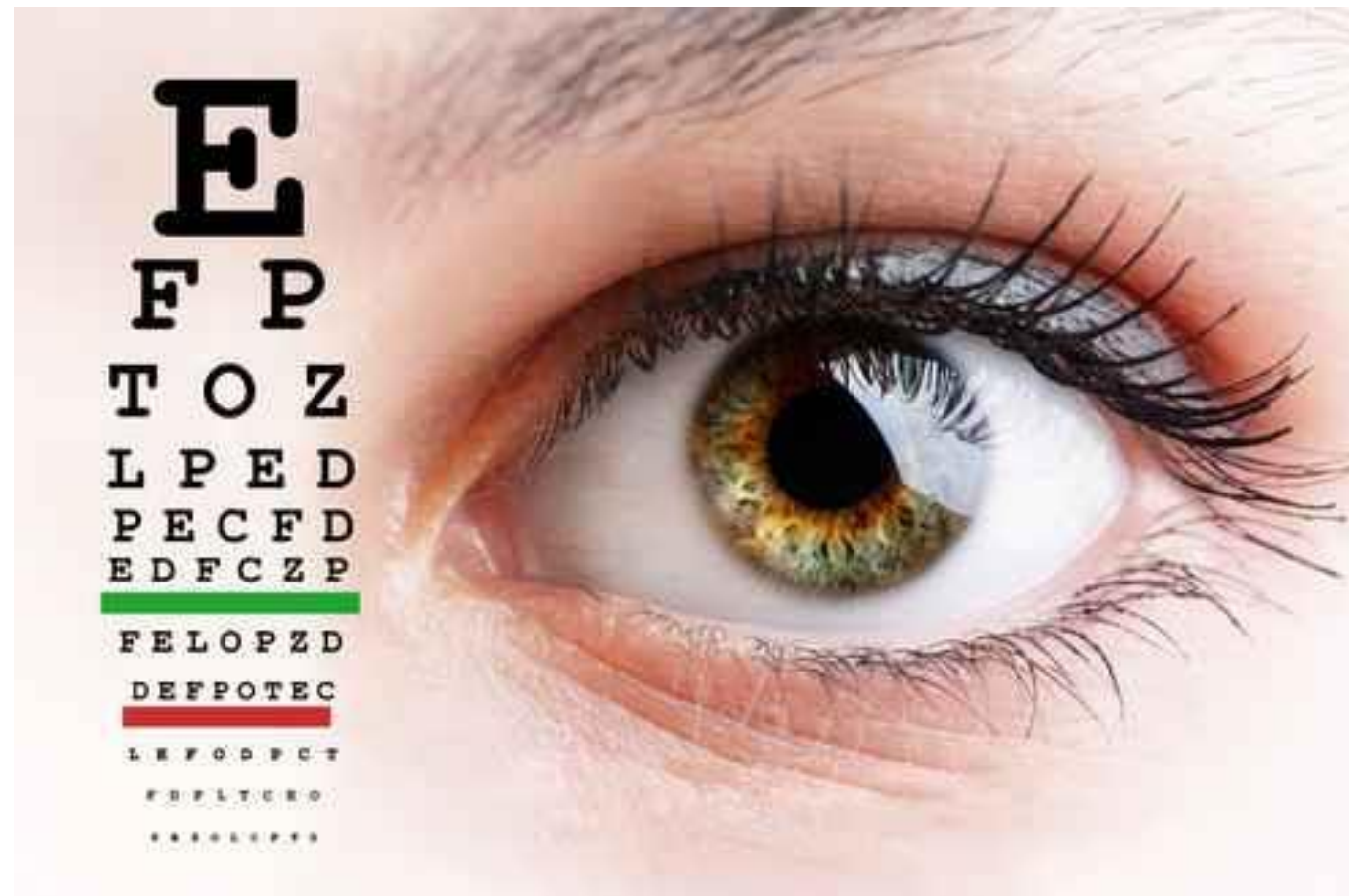
NHS Choices. (2016) *Arthritis*. Available at:
<http://www.nhs.uk/Conditions/Arthritis/Pages/Introduction.aspx> (Accessed: 11 January 2017).

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Visual Impairment: What is it?

- Visual acuity is the ability of the eye to see **fine detail**.
- Visual acuity loss is **common with ageing**.
- Visual tasks requiring acuity include **identifying graphics and symbols, reading signage** and recognising **faces**.
- **Reading text** is the most common task with a **high acuity demand**.
- **Font size, style and contrast** can impact on its legibility.



Inclusive Design Toolkit. Available at:
<http://www.inclusivedesign toolkit.com/UCvision/vision.html> (Accessed: 21 April 2017).

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For the moment we will focus on dexterity and vision



Vision- How well someone can see.



Dexterity – how well someone can hold and use something.



Can you design a range of tooth brushes for someone with arthritis and visual impairment ?



How you to Communicate ideas

Below is a page from the designer's portfolio showing the paint-pod concept.

In what ways has the designer used 'communication techniques to show his/her thinking? Discuss.

Orthographic sketch to show details of different views

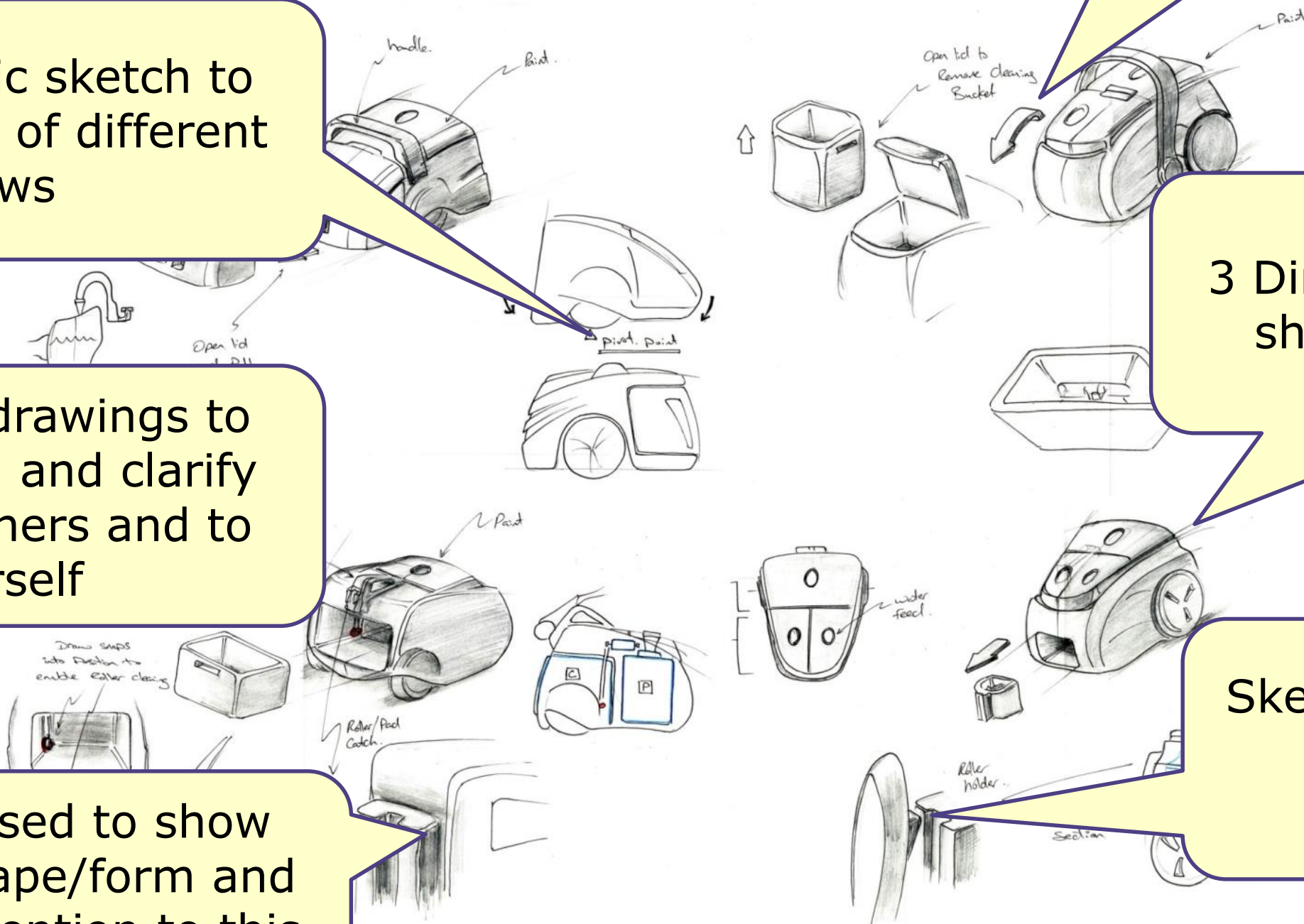
Annotated drawings to help explain and clarify ideas, to others and to yourself

Shading used to show product shape/form and to focus attention to this part of the concept

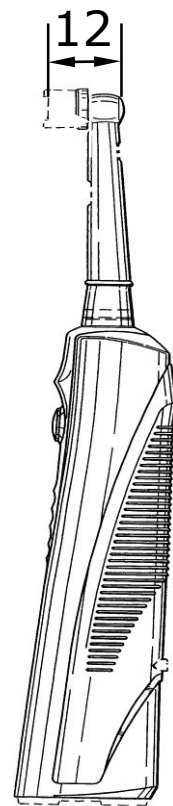
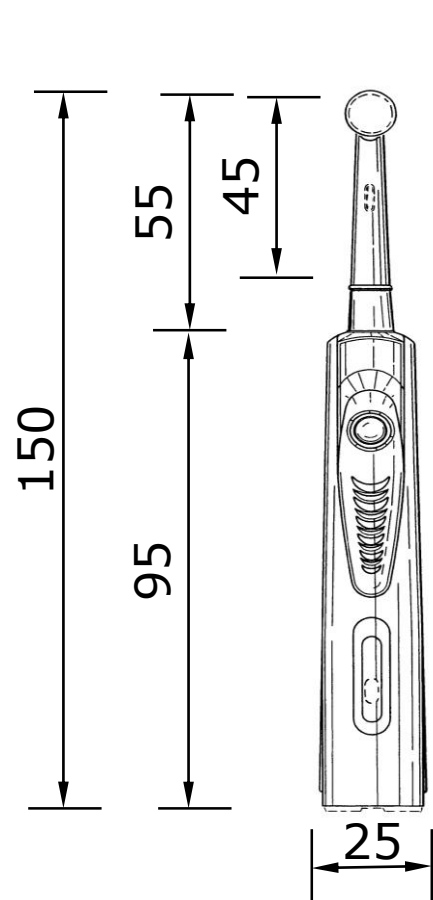
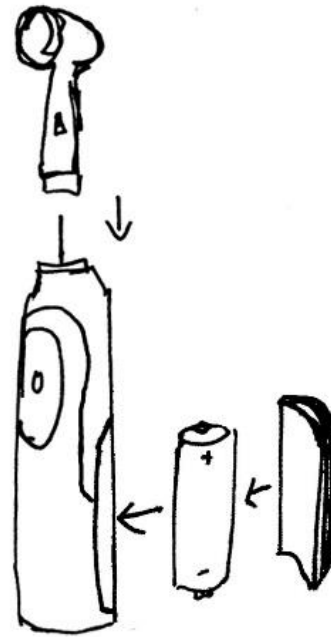
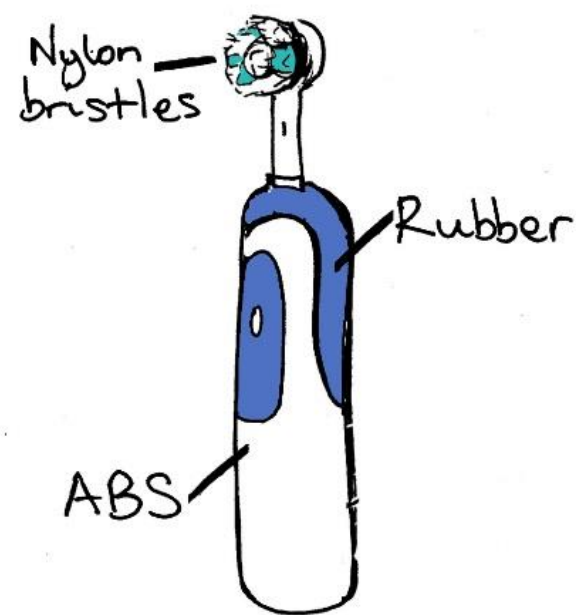
Arrows suggest how product works/functions

3 Dimensional sketch to show whole product

Sketches showing part of ideas to highlight details/features



Laying out your design ideas



Dimensions in mm

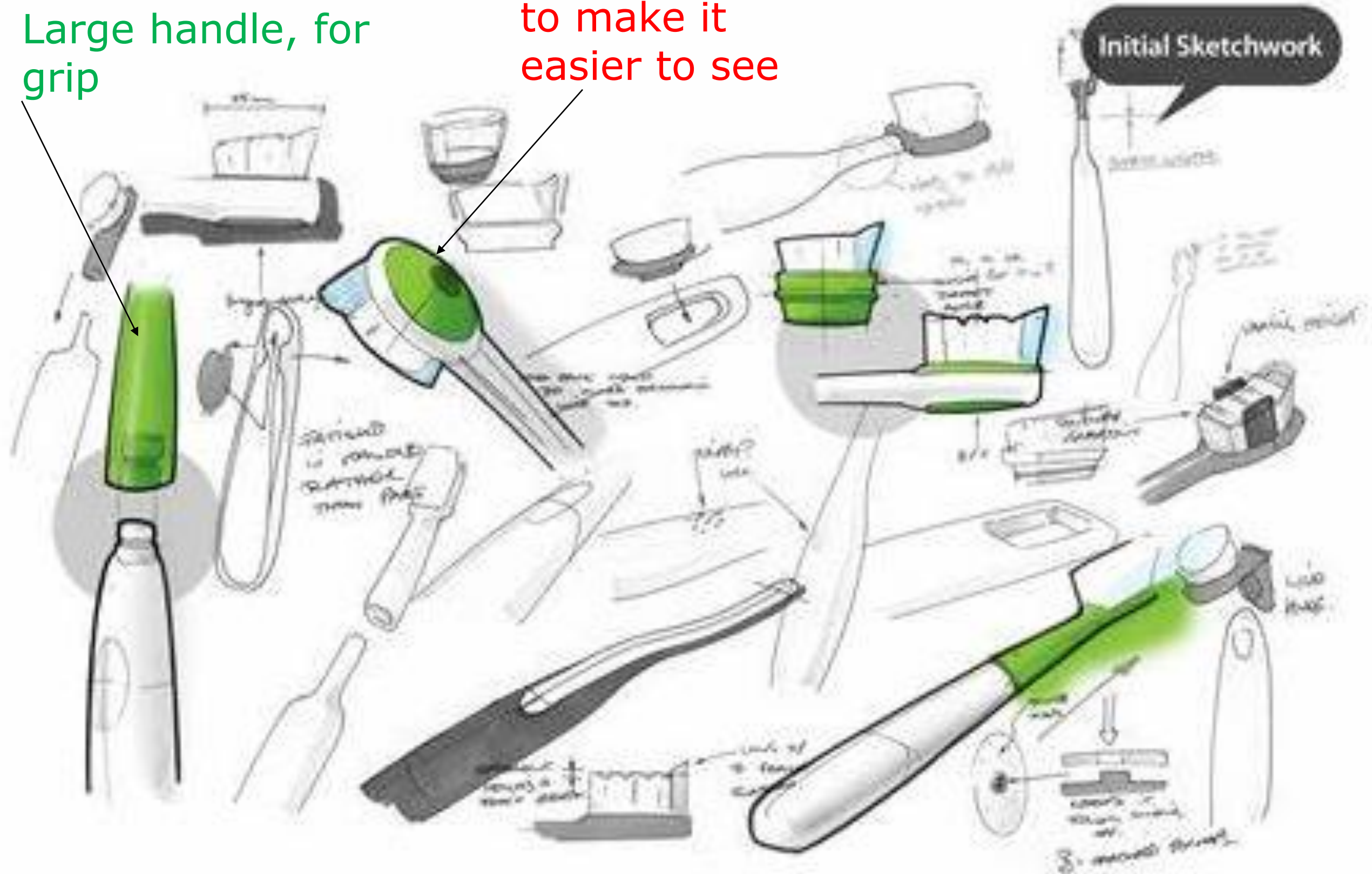
- Complete **sketches** of your ideas with **approximate dimensions in mm**.
- Annotate fully- Red pen comments show how the design considers visual impairment and green pen comments arthritis.
- The follow sheet will help you layout and label your work.



Draw as many ideas as possible.

Large handle, for grip

Glowing head to make it easier to see



Lesson 4 : Modelling or Prototyping Your Tooth Brush



Prototypes - their purpose

Below are some of the prototypes of the Paint Pod.

- What is the purpose of each model?
- What are the advantages (disadvantages) of each type of prototype?
- What materials/processes are used at each stage?

Space
Model



Functional
Model



Aesthetic
Model



Computer
Rendering



Actual
product



Activity: Prototyping

Space
Model



Functional
Model



- Select **one of your concepts** to **develop as a prototype (space or functional)**.
- **Choose modelling materials** that you have at home
- Work quickly to produce your prototype.



Email a photograph

Once you have finished your prototype email a photograph to –

jknight@soham-college.org.uk

